

## **REMARKS**

Favorable reconsideration is respectfully requested.

The claims are 1, 2, 6, 7, 8, 9, 10, and 11 with claim 10 being withdrawn from consideration.

The above amendment is responsive to points set forth in the Official Action as will be discussed below.

The specification has been amended responsive to the objection in Official Action paragraph 6.

With regard to the objection of claim 1 in Official Action paragraph 8, this has been corrected by the above amendment.

Further, in claim 1, features from claims 3, 4 and 5 and paragraph [0066] of the specification have been incorporated.

New claim 11 is supported by paragraphs [0023] and [0026] of the present specification. At the second line of the paragraph [0023] of the present specification, the reference to "ring opening addition polymerization" is not correct. Accordingly, "polymerization" has been deleted from the term "ring opening addition polymerization" in paragraph [0023] because it is obviously not a polymerization reaction but mere addition reaction.

With regard to the rejection of claims 1 to 9 on the issue of enablement, the rejection states that the specification, while being enabling for the application of the aqueous electrodeposition coating by electrodeposition coating, does not reasonably provide enablement or application of the same by any other coating process. However, this point is moot in view of the above amendment.

With regard to the rejection in Official Action paragraph 12 on the ground of indefiniteness, the rejection states that the recitation "a electrodeposition coating film" is confusing as to whether the film is altered from the first step or from another step. In reply, it is considered that the above amendment clarifies this point i.e. that the electrically conductive substrate to be coated is immersed in an electrodeposition coating composition and an electric voltage is applied. The gradient coating film is produced by such process.

Claims 1 to 9 have been rejected under 35 U.S.C. 102(b) as anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over JP 08-333528 A.

This rejection is respectfully traversed.

As is apparent from the above amended claim 1, the present invention is directed to a process for forming a cured gradient coating film which is composed of three layers, that is a resin layer (a) in contact with air, a resin layer (b) in contact with an electrically conductive substrate, and a mixing resin layer (c) between the resin layer (a) and the resin layer (b). The three layer structure is formed from a resin composition which comprises two resin components (a) and (b) and a curing agent (i.e. blocked polyisocyanate) and their solubility parameters are controlled as  $0.2 < (\delta b - \delta a) < 1.0$  and  $\delta a < \delta i < \delta b$  in which  $\delta a$  is a solubility parameter of the resin component (a),  $\delta b$  is a solubility parameter of the resin component (b) and  $\delta i$  is a solubility parameter of the blocked polyisocyanate.

JP 08-333528 discloses a cationic electrodeposition coating composition capable of separating into two layers. The coating composition of the JP '528 reference is composed of two resin components (a') and (b') and polyisocyanate curing agent. If the solubility parameters of the resin components (a') and (b') are expressed as  $\delta a'$  and  $\delta b'$ , respectively, the  $\delta b' - \delta a'$  is from 0.5 to 2.0 (see paragraph [0020] of the JP '528 reference). Accordingly, the parameter  $(\delta b - \delta a)$  herein overlaps that of the JP '528 reference. However, the JP '528 reference is silent on any relationship with the solubility parameter ( $\delta i$ ) of the blocked polyisocyanate curing agent

The solubility parameter ( $\delta i$ ) of the blocked polyisocyanate curing agent should be controlled between the solubility parameters  $\delta a$  and  $\delta b$ , according to the present invention. If the solubility parameter  $\delta i$  is outside the range of  $\delta a$  and  $\delta b$ , the curing agent does not distribute in both the surface in contact with air after layer separation and the surface in contact with the substrate and then, curing ability is not sufficient in those areas, which is supported by the paragraph [0042] of the present specification. The JP '528 reference neither suggests nor teaches the control of the solubility parameter ( $\delta i$ ) of the polyisocyanate curing agent and its technical effects in curing ability.

The other important difference between the present invention and the JP '528 reference resides in that the acrylic resin (a') of the JP '528 reference should be a self-crosslinking cationic acrylic resin while the acrylic resin (a) of the present application should not. In claim 1 as above-amended, it is not clearly stated that the acrylic resin is not self-crosslinkable and the acrylic

resin does not have a blocked isocyanate group. This is because the present specification does not include any support which indicates that the acrylic resin (a) excludes such self-crosslinkable blocked isocyanate group. It is believed that the term "blocked isocyanate group" is used in the JP '528 reference while the present application uses "blocked polyisocyanate" curing agent. In other words, the present specification does not use an isocyanate group and the term "poly" should be attached to the term "isocyanate", because the curing agent of the present invention should have two or more isocyanate groups by itself and therefore be expressed as "polyisocyanate".

On the other hand, in the JP '528 reference, the acrylic polymer should include an isocyanate group in its polymer molecule as functional group for self-crosslinking and it cannot be expressed as "polyisocyanate" or the like.

In new claim 11, as mentioned above, the cation-modified acrylic resin (a) is prepared either from the specific monomers which do not include an isocyanate group or from the specific polymer which does not have isocyanate group. This means that the cation-modified acrylic resin (a) has no place for inclusion of an isocyanate group in its molecule.

In the JP '528 reference, since the cation-modified resin is self-crosslinkable and the composition has enough curing ability, control of solubility parameter ( $\delta_i$ ) of the curing agent is not at all necessary. In the present invention, however, since the cation-modified resin is not self-crosslinkable, control of solubility parameter ( $\delta_i$ ) is necessary in order to preserve sufficient curing ability.

Accordingly, the present invention is manifestly different from the invention of JP '528.


For the foregoing reasons, it is apparent that the rejection on the JP '528 reference is untenable and should be withdrawn.

No further issues remaining, allowance of this application is respectfully requested.

If the Examiner has any comments or proposals for expediting prosecution, please contact undersigned at the telephone number below.

Respectfully submitted,

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